

DUETTE SERIES 2 OWNERS MANUAL



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SECTION 1—INITIAL SETUP



Section 1.1—Preparation

You will need the following items:

- Electric Screwdriver
- Phillips head drive bit
- Masking tape

Uncrating Duette Series 2

The Duette Series 2 is heavy, and care should be taken to prevent injury.

1. With the crate lid facing up, unscrew the wood screws securing the lid. Remove the lid and remove the foam packing material beneath the bottom of the Duette.
2. Gently slide the Duette out of the crate. Be careful not to scratch the sides of the painted enclosure. (The Duette is covered with a protective film. Do not remove this film until final setup of your speaker is completed. Follow the removal instructions included in Section 4—Care of the Finish.)
3. Gently remove the Novel Crossover (only applicable if you have purchased the Duette for bookshelf installation) from its section in the crate. Make sure to keep each Novel crossover with its corresponding Duette.

Uncrating the Duette Series 2 Dedicated Stand

If you purchased the Duettes with its dedicated stand, the Novel crossover is not included in the Duette crate. Instead, the crossover is located in the Duette Stand. The Duette Stand is shipped in its own crate. Please follow the same procedure above to uncrate the stands. Take care to match each stand with its corresponding Duette by serial number.

Section 1.2—Crate Content Checklist

Now that you have unpacked your Duette Series 2s, you can inventory all the additional items in the crates.

1 - Owner's Manual

1 - Warranty Registration

2 - Pin Style Grilles (1 per enclosure)

2 - Umbilical Cables (for bookshelf versions only)

2 - Novel Crossover per enclosure (for bookshelf versions only)



Section 1.3—Toolkit Bookshelf Version

Polishing Cloth

½" Nut Driver

7/16" Wrench

Universal Hex Driver

5/32" Allen Bit

9/64" Allen Bit

3/32" Allen Bit

3/16" Allen Bit

6 - A Spikes

4 - E Spikes

6 - Furniture Spikes

6 - Small Spike Disc

4 - 3.75 ohm Tuning Resistors

4 - 6.0 ohm Tuning Resistors

Section 1.4—Toolkit Dedicated Stand (found in the Duette Stand crate)

4 - Harnessing Bolt (button head)

9/16" Wrench

2 - Small Spike Discs

8 - Threaded Spikes

8 - Spike Nuts

7/32" Elbow Allen

Note: The Duetto Series 2 loudspeaker is configurable to suit its acoustic environment. In order to access the performance capabilities of your Duettes, it is critical that you adjust your Duettes correctly.

Stand Mount

If you plan to install your Duettes on stands, please proceed to **Section 2.**

Bookshelf Installations

If you plan to install your Duetto on a bookshelf, please proceed to **Section 3.**



SECTION 2—DUETTE STAND MOUNT



Section 2.1—Installing the Duette on its Dedicated Stand

Note: Refer to the instructions in Section 4.1 that describe the safe procedure in removing the protective film from the Duette. Remove the film at this time.

Remove the Allthread from the Bottom of Duette

The Duette 2 is shipped with three allthreads installed in the mounting holes in the bottom of the enclosure to prevent adverse effects if it is installed with no spikes or installing on stand where only 2 of the 3 holes are utilized. In preparation for the Duette to be bolted to its dedicated stand, remove the two front bolts. Leave the third bolt installed.

Attach the Duette to the Stand

Follow the steps below to attach the Duette to the dedicated stand.

1. Locate the four harnessing bolts and the 7/32" inch Allen wrench.
2. Locate the stand with an odd serial number and place that stand in the general area in which it is to be installed on the left.
3. Place the even-numbered stand on the right.
4. The Duette's serial number will match the serial number of the stand to which it is mated. Place each Duette in the area with its corresponding stand mate.



Install the Harnessing Bolts

5. Carefully place the left Duette on its stand. Looking from below, line up the two holes located on the front of the stand plate with corresponding holes in the bottom of the Duette.
6. Hand thread the two harnessing bolts into the Duette through each of the two stand holes.
7. Using the 7/32" Allen wrench, tighten the bolt. Take care not to over-tighten the bolt. Doing so may result in stripping the bolt hole.
8. Repeat on the other Channel.

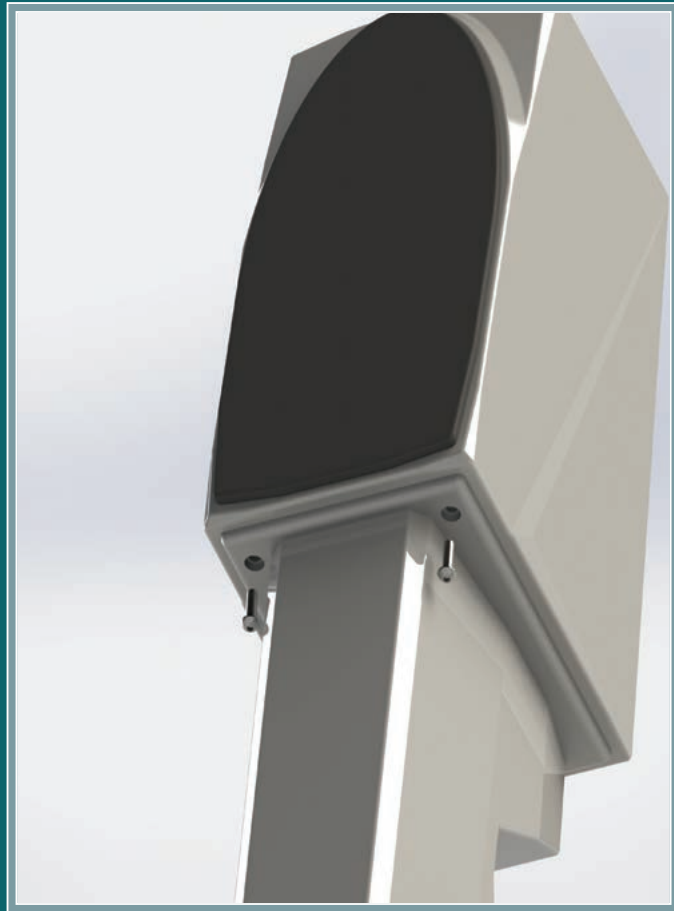


FIGURE 2—THREAD THE TWO HARNESSING BOLTS UP THROUGH THE STAND HOLES AND INTO THE DUETTE.

Connecting the Umbilical

The Duette Stand together with the Duette form a complete system. The crossover is strategically located in a purpose-built enclosure in the base of the stand. Custom-engineered wires, which exit the top of the column in the rear of the stand, supply the signal to the Duette speaker. There are separate wires for the midrange and tweeter. The wires are color-coded to avoid confusion. Simply connect the spade-tipped wire to the appropriate corresponding binding post on the Duette, as indicated by the color.

The connections for the amplifier are located on the crossover cover plate at the base of the Duette Stand.

Section 2.2—Finding the Correct Position

Note: Make sure there is at least 3" of port relief from the rear boundary. Never install the product in a location that blocks the port.

Side to Side voicing of the product during set-up is critically important and finding the optimal spot along the wall is just as important as finding the Zone of Neutrality and properly setting the system up within those boundaries.

In its size and price range, the Duette is unmatched in its ability to reproduce the musical event. It is truly state of the art. However, room acoustics and boundary interactions affect the sound of a loudspeaker to such a large degree that poor setup can seriously degrade your enjoyment of even the finest loudspeaker. Therefore, we offer the following guidelines on room acoustics and their interactions with loudspeakers. While we will also outline some detailed suggestions on the



FIGURE 3—CONNECT THE UMBILICAL TO THE DUETTE, OBSERVING THE COLOR-CODED WIRES.

setup of the Duette, we strongly suggest that you have your local Wilson Audio dealer perform the final speaker “voicing” with you. Wilson dealers are specially trained in setting up Wilson loudspeakers and will ensure that you realize the full value of your purchase.

Zone of Neutrality

The “Zone of Neutrality” is an area in your room where the speakers will sound most natural. This location is where the speakers interact the least with adjacent room boundaries. It is important to have a clear working space while determining the Zone of Neutrality.

The following is a simple method to locate the Zone of Neutrality within your listening environment:

1. Stand against left sidewall, the wall perpendicular to the location where you intend to position your Duette. Speaking in a moderately loud, normally pitched voice and at a constant volume, project your voice out into the room, along the rear wall.
2. While speaking, slowly move out into the room, progressing in a direction parallel to the rear wall. It is helpful to have another listener seated in the listening position to assist you during this process. Listen to how your voice “frees up” from the added bass energy imparted by the side-wall boundary. You may also notice that your voice is quite spatially diffuse (to your assistant, your voice will sound spatially large and difficult to localize) as you begin to ease away from the side wall.
3. At some point during your progression along the rear wall laterally into the room, you will observe a sonic transition in your voice; it will sound more tonally correct and less spatially diffuse (your assistant can now precisely localize the exact origin of your voice). When you hear this transition, you have entered the inner edge of the Zone of Neutrality. Place a piece of tape on the floor to mark this location. Although it will vary from room to room, the zone in most rooms begins between two and

- a half to three feet from the side wall.
4. Continue to walk slowly away from the side wall toward the center of the room. After some distance, usually one to two feet past the first piece of tape, you will begin to hear your voice lose focus and appear to reflect (echo) in front of you. This is caused by the return of the room's boundary contribution. Your voice is now interacting with the opposite side wall. At the point where you begin to hear the reflected sound of your voice, you have reached the outer edge of the Zone of Neutrality. Place a piece of tape on the floor and mark this location. The distance between the "inner" and "outer" edge tape marks is usually between eight inches (for small, interactive rooms) but can be three feet or more (for large, more neutral rooms).
 5. The area between the two tape marks is where your Duette will perform



best. Experiment by systematically moving the Duette laterally within these marks to find the optimal position.

6. Repeat this process for the other speaker location. These are your Zones of Neutrality, one for each channel.

Section 2.3—Installing the Spikes

Your dealer is trained in the art and science of the Wilson Audio Setup Procedure (WASP) outlined in the previous section. Before the spike/diode assemblies are attached to the bottom of Duette Stand, the set up and fine tuning of your loudspeaker should be completed. Before spiking Duette Stand, use masking tape to carefully mark their location so the Duette can be easily returned to its optimized position.

Spike Assembly

1. Thread the spike nuts onto each of the spikes until they are approximately three-quarters down the threads toward the spike tip. This will ensure you have some room in which to adjust the spike in order to level the loudspeaker.
2. Place the spike assemblies out of the traffic pattern until they are needed during the installation.



FIGURE 4—INSTALL THE STAND SPIKES AND NUTS INTO THE THREADED HOLE ON THE BOTTOM OF THE STAND PLATE.

3. Take care to mark the exact location of the Duettes with masking tape to ensure the speakers can be returned to their set up position.
4. Carefully lay the Duette on its side. If you have an assistant, alternatively, the spikes can be installed if one person carefully tilts the speaker exposing two of the spikes on one side, while the other installs the spikes.

Installation Procedure

5. Insert the spike assemblies into the four holes located on the bottom of each Duette Stand. Tighten until the top surface of the nut touches the bottom surface of the aluminum plate.
6. Take care to observe the location of the Duette by marking on masking tape the precise location of Duette's position. Return the loudspeaker to an upright position.

Section 2.4—Leveling the Duette

1. Place a level on the left to right oriented axis in the flat area on top of the Duette. If it is level, move to the next step.
2. You may rotate the spike tips in place by hand, or by using a vice-grip or toothed pliers.
3. Lengthen the appropriate spike or spikes on the lower side until the Duette is level.
4. If the speaker is leaning to the left, lengthen both spikes on the right hand side of the speaker. If the speaker is leaning right, lengthen the left hand spikes. Lengthen the spikes incrementally, checking and rechecking the level until the Duette is level left to right.
5. Now place the level on the front to back oriented axis. If it is level, then Duette is level. If the Duette is leaning one way or the other, following the same process as above, lengthen the appropriate spikes on the front

- or rear of the loudspeaker until the Duette is level.
6. To find out which spike to lower, grasp the Duette channel and gently rock it back and forth. This will identify the spike that is out of level from the other three. If there is movement, lengthen the appropriate spike until the Duette sits solidly on the floor. Make sure the spike is penetrating the carpet surface and is resting on the solid floor beneath. Alternatively, if it is desirable to protect the surface beneath the spike, the aluminum spike disks can be installed. There is a conical detent in the disk in which the spike rests.
 7. Once all adjustments have been made, with the 9/16" wrench provided, tighten the nut on the spike to the stand plate. **DO NOT OVERTIGHTEN!** "Snug" is tight enough.

Section 2.5—The Duette Tuning Resistor

The Duette's tuning resistor, located on the rear of the crossover (located on the rear of the stand), is one key to optimizing the performance of your Duettes. Resistors for tuning included in the toolkit allow the user to adjust the tweeter output ± 1 dB. The alternative resistors are located in



the Duette toolkit.

To change the resistor, locate the small resistor Allen screw on the rear of the Duette stand crossover plate. Remove the Allen using the small Allen wrench provided in the toolkit. Loosen both binding posts and remove the resistor.

To install the new resistor, position the metal tab of the resistor over the threaded hole, and then slide the leads into the holes in the binding post. Carefully install the Allen screw so that the resistor is snug against the rear plate, and tighten the binding post so that they are snug. **Do not over tighten as this may result in damage to the binding post and/or the resistor leads.**

SECTION 3 — DUETTE ON A SHELF



Section 3.1—Installing the Duette onto a Bookshelf

Note: Refer to the instructions in Section 4.1 that describe the safe procedure in removing the protective film from the Duettes. Remove the film at this time.

Note: The Duette performs optimally with the umbilical cable provided. Never replace this cable with another brand.

Remove the Allthread

The Duette 2 is shipped with allthreads installed in the spike holes in the bottom of the enclosure to prevent adverse effects if it is installed with no spikes or installing on a stand where only 2 of the 3 holes are utilized. Remove all three bolts before installing the Duette furniture spikes.

Finding the Correct Position

The Duette benefits from fine tuning both side-to-side as

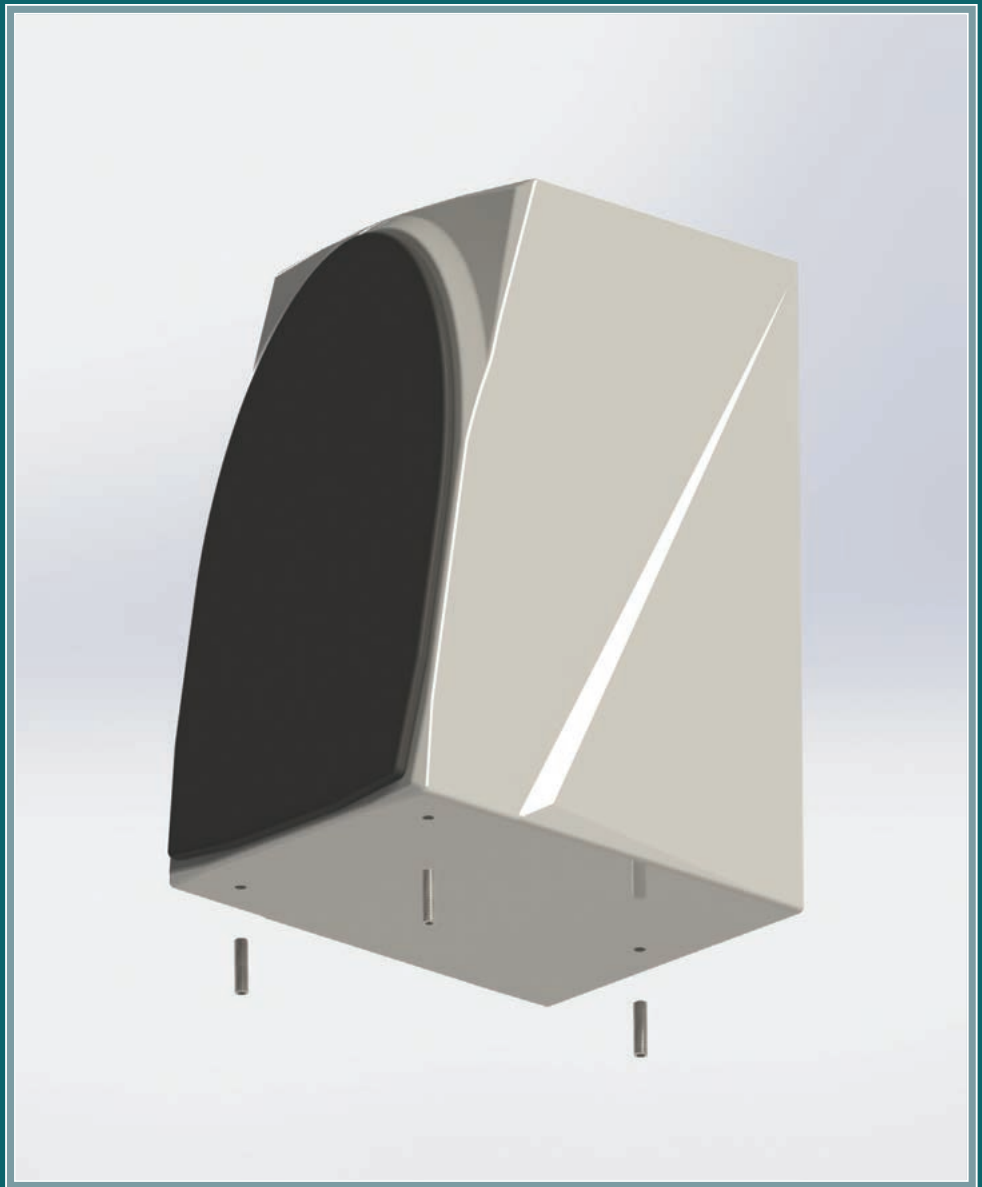
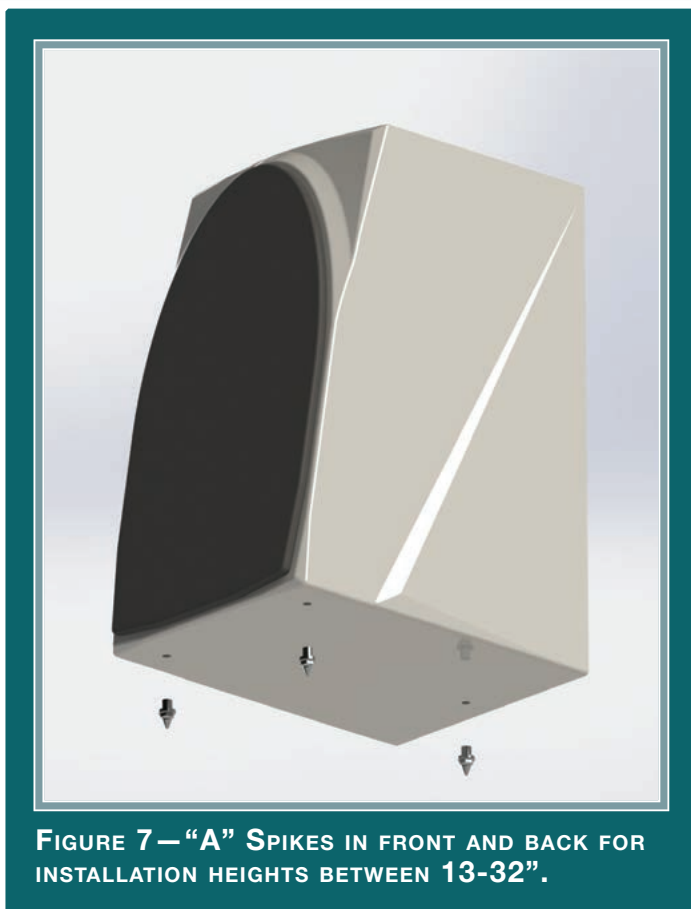


FIGURE 6—REMOVE ALL THREE ALLTHREAD BOLTS PLUGS FROM THE BOTTOM.

well as front-to-back tuning, within the constraints and limits of the shelf. Refer to Section 2.2 for instructions on how to optimize the location of your Duettes in the zone of neutrality. The Duette should be slightly “toed-in” toward the listener, such that, from the seated position, the listener sees a small portion of the inside of each cabinet.

Note: Even when resting on its brass discs, take care when moving Duette as there is still risk of scratching the shell beneath.



Installing the Furniture Spikes

Refer to the Table in Section 6.2 for the proper spike configuration for your installation. When installing the Duette at floor height up to 12” off the floor (as measured from the bottom of the enclosure) the E-Spikes will be installed on the front of the enclosure and the single “A” spike in the rear receptacle. For heights of 13-32 inches above the floor, install the “A” spike in all three holes, for heights of 33-46 inches, install the “E” spike in the



back of enclosure, and the “A” spikes in the front two holes. Heights above 46” and higher are not recommended without modifying the surface to which the Duette is attached. Contact your dealer for more details. For the most accurate time alignment, the optimal height is 23” from the floor (measured from the bottom of enclosure) and the standard A-Spikes will be installed in all threaded holes.

Connecting the Novel Crossover

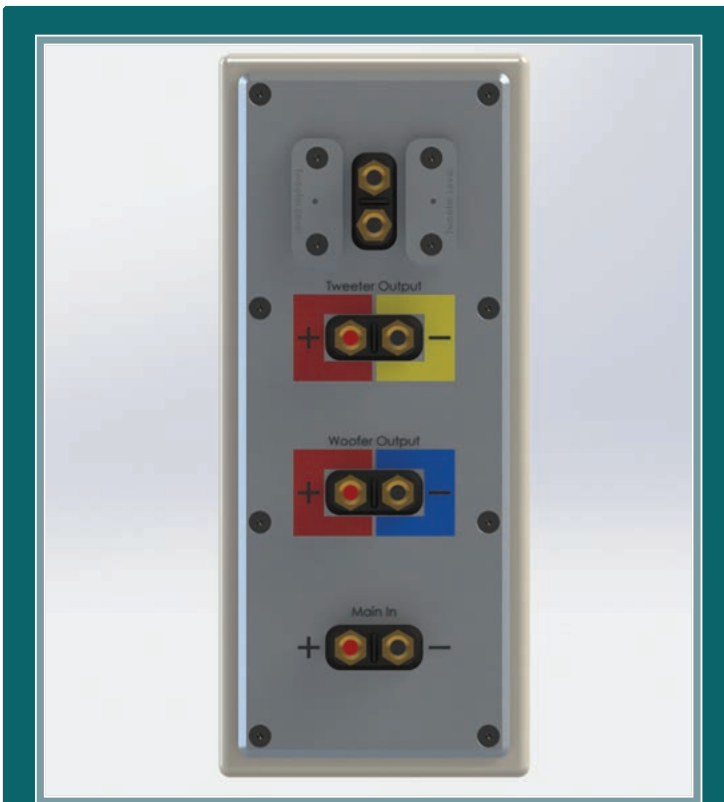


FIGURE 10—CONNECT THE UMBILICAL BETWEEN THE DUETTE AND THE NOVEL CROSSOVER MAKING SURE TO OBSERVE THE COLOR CODING



FIGURE 9—“A” SPIKES IN FRONT AND “E” SPIKE IN BACK FOR INSTALL HEIGHTS BETWEEN 33-46”.

Locate the umbilical cable that you will use to connect the Novel crossover to your Duette Loudspeaker. The umbilical cable is configured with a separate woofer lead and tweeter lead, and is directional. Color coding on the wire, the Novel crossover, and the Duette loudspeaker binding posts will assist you in the correct setup of the umbilical cable. Attach the cable labeled “Tweeter” to the tweeter binding posts on both the Duette and the Novel. Attach the woofer cable

to the posts labeled “Woofers”.

Note: It is very important that you connect the umbilical properly. Failing to do so will greatly compromise the performance of your Duettes and can result in damage to the drive units. Do not use a non-Wilson wire assembly between your Duette and Novel. This will severely compromise the performance of your Duettes and void your warranty.

Section 3.2—The Duette Tuning Resistor

The Duette’s tuning resistor, located on the rear of the Novel crossover, is one key to optimizing the performance of your Duettes. Resistors for tuning included in the toolkit allow the user to adjust the tweeter output ± 1 dB. The alternative resistors are located in the Duette toolkit.

To change the resistor, locate the small resistor Allen screw on the rear of the Novel Crossover. Remove the Allen using the small Allen wrench provided in the toolkit. Loosen both binding posts and remove the resistor.

To install the new resistor, position the metal tab of the resistor over the threaded hole, and then slide the leads into the holes in the binding post. Carefully install the Allen screw so that the resistor is snug against the rear plate, and tighten the binding post so that they are snug. **Do not over tighten as this may result in damage to the binding post and/or the resistor leads.**



FIGURE 11 — RESISTOR CONNECTOR ON REAR OF NOVEL CROSSOVER.

SECTION 4—CARE OF THE FINISH



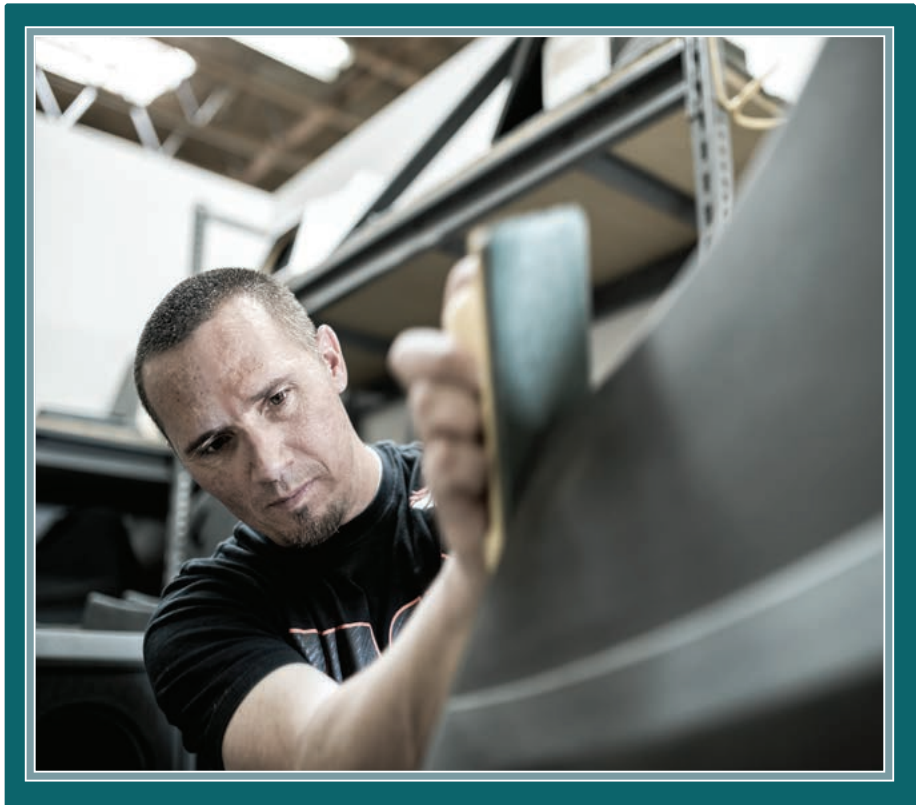
Section 4.1—Care of the Finish

The Duette Series 2 loudspeakers are hand painted with WilsonGloss™ paint and hand polished to a high luster. While the finish seems quite dry to the touch, final curing and complete hardening takes place over a period of several weeks.

Removing Protective Film

To protect the finish of the Duette during final manufacture, shipment, and setup in the listening room, a removable layer of protective film has been applied over the finish. It is recommended that this film be left in place until the speakers are in their final location in the listening room. Once their final position has been determined, remove the film by following this procedure:

1. Ensure the speaker surface is room temperature before removing the protective film. Removing the protective film when the speaker surface is cold can damage the paint surface.
2. Slowly remove the film from the top down, large sections at a time, gently pulling the film downward and outward. Tearing the film aggressively can damage the paint.



3. Take care in removing the protective film near edges and corners to prevent paint damage in these areas.
4. The protective film should not be left on the painted surface for extended periods of time nor exposed to heat sources and direct sunlight.

Dusting the Duette Series 2

It is important that the delicate paint finish of the Duette be dusted carefully with the dust cloth, which has been provided. We recommend that the following procedure be observed when dusting the speakers:

- Blow off all loose dust.
- Using the special dust cloth as a brush, gently whisk off any remaining loose dust.
- Shake out the dust cloth.
- Dust the finish, using linear motions in one direction parallel to the floor. Avoid using circular or vertical motions.

Because the paint requires a period of several weeks to fully cure, we recommend that no cleaning fluids, such as glass cleaners, be used during this initial period of time. When the paint is fully cured, heavy fingerprints and other minor smudges may be removed with a glass cleaner. Always use the dust cloth. Stronger solvents are not recommended under any circumstances. Consult your dealer for further information if required. To maintain the high luster of the finish, periodic polishing may be desired. We recommend a nonabrasive carnauba-based wax and a soft cloth.

Care of the Grilles

Periodically, you will want to clean Duette's grilles. This is best done by using the round brush attachment on a vacuum cleaner hose. Gently vacuum the front surface of

the grille. Be careful not to apply too much pressure. Do not use a hard plastic attachment against the grille. The grille cloth is stretched tightly over the grille frame. Too much pressure or use of a hard plastic attachment could cause the grille material to tear, especially in the corners.

Often Wilson speaker owners desire to change the look of their listening room by changing the color of their speaker grilles. In addition to basic black, Wilson Audio offers a variety of grille colors to match most WilsonGloss finishes. Contact your local dealer for grille cloth samples or to order replacement grilles for your Duettes.

Break-in Period

All audio equipment will sound best after its components have been broken in for some period of use. Wilson Audio breaks in all woofers and mid-range drivers for approximately 12 hours. All drivers are then tested, calibrated, and matched for their acoustical properties. In your listening room, expect 25 to 50 percent of break-in to be complete after two hours of playing music at normal listening levels. Ninety percent of break-in is complete after 24 hours of playing. Playing a CD on repeat overnight can accomplish this task quickly. Wilson Audio recommends chamber music for this task.

Section 4.2—Enclosure Technology

Materials

Wilson Audio has conducted many hours of research on the impact of materials on speaker enclosure performance. Through this effort, Wilson pioneered the use of non-resonant materials, first with the use of mineral filled acrylic in the WATT and continuing with the further development of proprietary materials for X-1 Grand SLAMM and MAXX. Even the best materials are not suited to all aspects of enclosure construction. Therefore, like all Wilson loudspeakers, the Duette Series 2 is constructed of several exotic materials chosen for their specific performance attributes relevant to different

portions of the enclosure.

Duette Series 2 is constructed using non-resonant, high-density, composites which are then cross braced to further reduce cabinet resonance. Each of these composites meets and exceeds the highest of ANSI test standards for its use, while offering very tight tolerances, high hardness, uniform density, and dimensional stability.

Adhesive

Wilson Audio has conducted exhaustive research into the best adhesives to permanently bond our speaker enclosures. This is often an overlooked element crucial to the proper performance of a loudspeaker. Correct modulus of elasticity, coefficient of thermal expansion, and natural frequency response are just a few of the important elements of adhesives.

A highly cross-linked, thermo-set adhesive is used for the construction of the enclosure. It was also chosen for its excellent bond strength, solvent resistance, hardness, and optimum vibrational characteristics.

Section 4.3—Depth of Design

Duette Series 2's compellingly authentic performance and lasting value are



achieved through careful implementation of cutting edge design and engineering and then executed using the highest performance materials. Wilson Audio's use of proprietary enclosure materials and adhesives are employed to achieve truly exceptional speaker cabinet performance. The use of these materials in Duette result in an enclosure that is inherently inert and non-resonant. All of these structural aspects are combined, allowing Wilson Audio to deliver a product that maintains the strictest structural tolerances, durability, and reliability. This also means that the Duettes will have consistent, repeatable performance, unaffected by the climatic conditions, anywhere in the world. Finally, like all Wilson products, Duette is hand-crafted with meticulous attention to detail, with an unwavering commitment to excellence. Thus, Duette will impart to her owner beauty and pleasure for many years to come.

SECTION 5—IN YOUR ROOM



**WILSON
AUDIO**

Section 5.1—Introduction

You are surely excited about setting up your Duette Series 2 loudspeakers and doing some listening, but before you begin we would like to discuss some of the important room acoustical information that will help you set up your loudspeakers properly.

Section 5.2—Room Reflections

Slap Echo

Probably the most obnoxious form of reflection is called “slap echo.” With slap-echo, primarily midrange and high frequency sounds reflect off of two parallel hard surfaces. The sound literally reverberates back and forth until it is finally dissipated over time. You can test for slap echo in any room by clapping your hands sharply in the middle of the room and listening for the characteristic sound of the echo in the mid-range. Slap echo destroys the sound quality of a stereo system in two ways:

- It adds harshness to the upper midrange and treble by storing time-domain smearing energy.
- It destroys the delicate phase relationships, which help to establish an accurate sound stage.

Slap echo is a common acoustical problem in the typical domestic listening room because most of these rooms have walls with a hard, reflective nature, only occasionally interrupted by curtains, wall art, or drapes. The best (but least practical) solution to eliminate slap echo is nonparallel walls. This is because, rather than support slap-echo, nonparallel walls allow the sound to diffuse. This approach can be accounted for during the construction process. For existing rooms, slap echo can also be controlled entirely by the application of absorptive materials to the hard surfaces. These are absorptive materials that can be used to ameliorate slap echo:

- Illbruck Sonex®

- Air duct board
- Cork panels
- Large ceiling to floor drapes
- Carpeting to wall surfaces

In many domestic listening environments, heavy stuffed furnishings reduce slap echo somewhat. Unfortunately, their effectiveness is not predictable. Diffusers are sometimes also used to very good subjective effect, particularly in quite large rooms. Sound absorbent materials such as described above will alter the tonal characteristic of the room by making it sound “deader,” less “bright and alive,” and “quieter.” Soundtrack effects will be more localized. However, over-damping the room can render reproduced sound that is lacking in musical involvement and “aliveness.”

Diffusers, on the other hand, do not affect the tonal balance characteristic of the room as much. Placed properly, diffusers create a smoother and more open sound. Some diffusers, due to their construction, create narrow midrange peaks and suck-out the warmth region. Do not use diffusers on the wall behind the speakers or on the side-walls directly beside the speakers. It is our experience that all of these room treatment devices should be used judiciously.

Standing Waves

Another type of reflection phenomenon is “standing waves.” Standing waves cause the unnatural boosting or accentuation of certain frequencies, typically in the bass, to be found at certain discreet locations in the room. These locations differ according to room dimension and size. A room generating severe standing waves creates difficulty in setup. In these rooms, the speaker will sound radically different as it is moved around. The effects of standing waves on a loudspeaker’s performance are primarily in the areas

listed.

- Tonal balance
- Resolution of low-level detail
- Soundstaging

Standing waves are more difficult to correct than slap echo because they tend to occur at a lower frequency. Absorbent materials, such as Illbruck Sonex, are ineffective at controlling reflections in the bass region. Moving speakers about slightly in the room is, for most people, their only control over standing waves. Sometimes a change of placement of as little as two or three inches can dramatically alter the tonal balance of a small system. Fortunately, minor low frequency standing waves are well controlled by positioning ASC Tube Traps™ in the corners of the room. Very serious low frequency accentuation usually requires a custom-designed bass trap system.

Low frequency standing waves can be particularly troublesome in rooms constructed of concrete or brick. These materials trap the bass in the room unless it is allowed to leak out of the room through windows and doors.

In general, placement of the speaker in a corner will excite the maximal number of standing waves in a room and is to be avoided for most direct radiator, full-range loudspeaker systems. Some benefit is achieved by placing the stereo pair of loudspeakers slightly asymmetrically in the listening room. This is so the standing waves caused by the distance between one speaker and its adjacent walls and floors are not the same as the standing wave frequencies excited by the dimensions in the other channel.

Comb Filter Effect

The comb filter effect is a special type of standing wave noticeable primarily at higher frequencies and shorter wavelengths.

Acoustical comb filtering occurs when sound from a single source, such as a loud-

speaker, is directed toward a microphone or listener from a distance. The first sound to reach the microphone is the direct sound, followed by a delayed, reflected sound. At certain frequencies, cancellation occurs because the reflected sound lags in phase relative to the direct sound. This cancellation is most apparent where the two frequencies are 180 degrees out of phase. Further, there is augmentation at other frequencies where the direct and the reflected sounds arrive in phase. Because it is a function of wavelength, the comb filter effect will notch out portions of the audio spectrum at regularly-spaced intervals. Subjectively, comb filter effect evidences itself as follows:

- Added roughness to the sound.

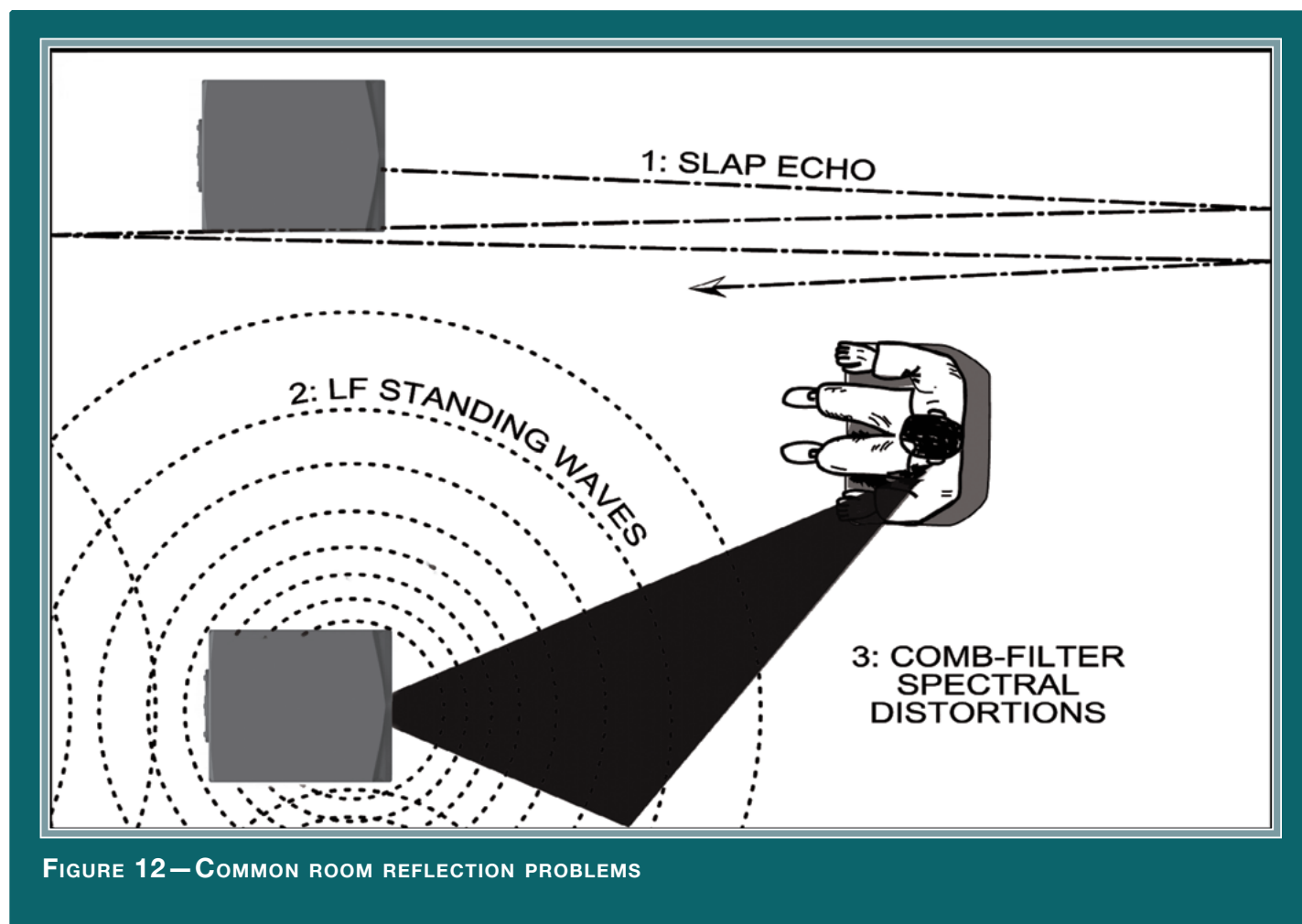


FIGURE 12—COMMON ROOM REFLECTION PROBLEMS

- Reduction of harmonic richness.
- Smearing of lateral soundstage image focus and placement.

Section 5.3—Resonances

Resonance in listening rooms is generally caused by two sources:

- Structures within the listening room.
- The volume of air itself within the listening room.

Structural Resonance

Structural resonances are familiar to most people as buzzes and rattles, but this type of resonance usually only occurs at extremely high volume levels and is usually masked by the music. In many wood frame rooms the most common type of structural resonance problem is “booming” of walls and floors. You can test for these very easily by tapping the wall with the palm of your hand or stomping on the floor. Most rooms exhibit mid-bass “boom” when struck. The loudspeaker playing in the room also excites these resonances. To give you an idea of what the perfect wall would sound like, imagine rapping your hand against the side of a mountain. Structural wall resonances generally occur in the low to mid-bass frequencies and add a false fullness to the tonal balance. They, too, are more prominent at louder levels, but their contribution to the sound of the speaker is more progressive. Rattling windows, picture frames, lamp shades, etc., can generally be silenced with small pieces of caulk or with blocks of felt. However, short of actually adding additional layers of sheet rock to flimsy walls, there is little that can be done to eliminate wall resonances.

Air Volume Resonance

The physical dimensions and volume of air in a room will also support standing

wave modes and resonances at a frequencies determined by the size of the room. Larger rooms will resonate at a lower frequency and have more complex (better) modal distributions than will smaller rooms. Air volume resonances, wall panel resonances, and low frequency standing waves, together, combine to form a low frequency coloration in the sound. At its worst, it is a grossly exaggerated fullness, which tends to obscure detail and distort the natural tonal balance of the speaker system. Occasionally, however, there is just enough resonance to give a little added warmth to the sound, an addition some listeners prefer. Careful placement of loudspeakers in the room can dramatically reduce the speakers' destructive interaction with low frequency modes. ASC Tube Traps™ have been found to be effective in reducing some of these low frequency room colorations. Custom designed and constructed bass traps, such as perforated Helmholtz resonators, provide the greatest degree of low frequency control.

Section 5.4—Your Room

Room Shapes

Standing waves are pressure waves propagated by the interaction of sound and opposing parallel walls. This interaction creates patterns of low and high acoustical pressure zones that accentuate and attenuate particular frequencies. Those frequencies are dependent on room size and dimension.

There are three basic shapes for most rooms: square, rectangular, and L-shaped.

A perfectly square room is the most difficult room in which to set up speakers. By virtue of its shape, a square room is the perfect medium for building and sustaining standing waves. These rooms heavily influence the music played by loudspeakers, greatly diminishing the listening experience.

Long, narrow, rectangular rooms also pose their own special acoustical problems for speaker setup. They have the ability to create several standing wave nodes, which

will have different standing wave frequency exaggerations depending on where you are sitting. Additionally, these long rooms are often quite lean in the bass near the center of the room. Rectangular rooms are still preferred to square rooms because, by having two sets of dissimilar length walls, standing waves are not as strongly reinforced and will dissipate more quickly than in a square room. In these rooms, the preferred speaker position for spatial placement and midrange resolution would be on the longer walls. Bass response would be reinforced by speaker placement on the short walls.

In many cases, L-shaped rooms offer the best environment for speaker setup. Ideally, speakers should be set up along the primary (longest) leg of the room. They should fire from the end of the leg (short wall) toward the L, or they should be along the longest wall. In this way, both speakers are firing the same distance to the back wall. The asymmetry of the walls in L-shaped rooms resists the buildup of standing waves.

The Duettes Series 2 was designed to be installed exclusively near a boundary. This includes bookshelf installations, custom cabinet installations, or those installations where the Duette is placed on its dedicated stand near the rear wall.

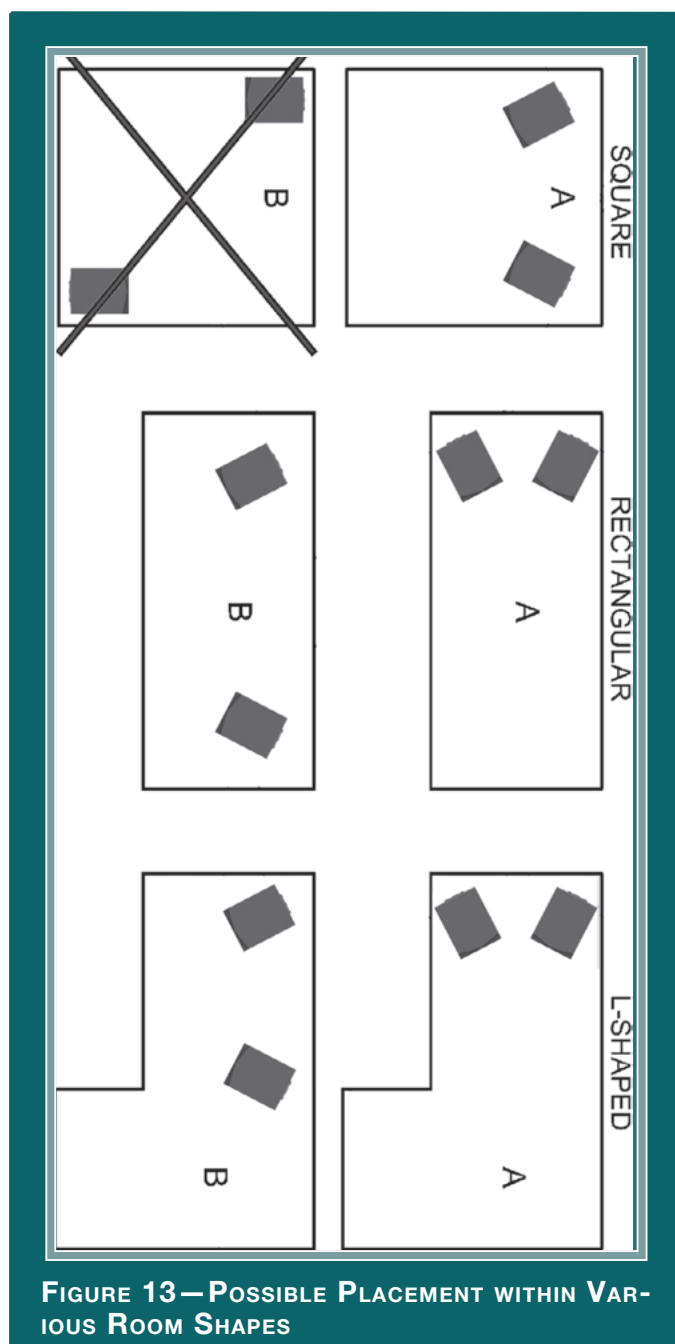


FIGURE 13—POSSIBLE PLACEMENT WITHIN VARIOUS ROOM SHAPES

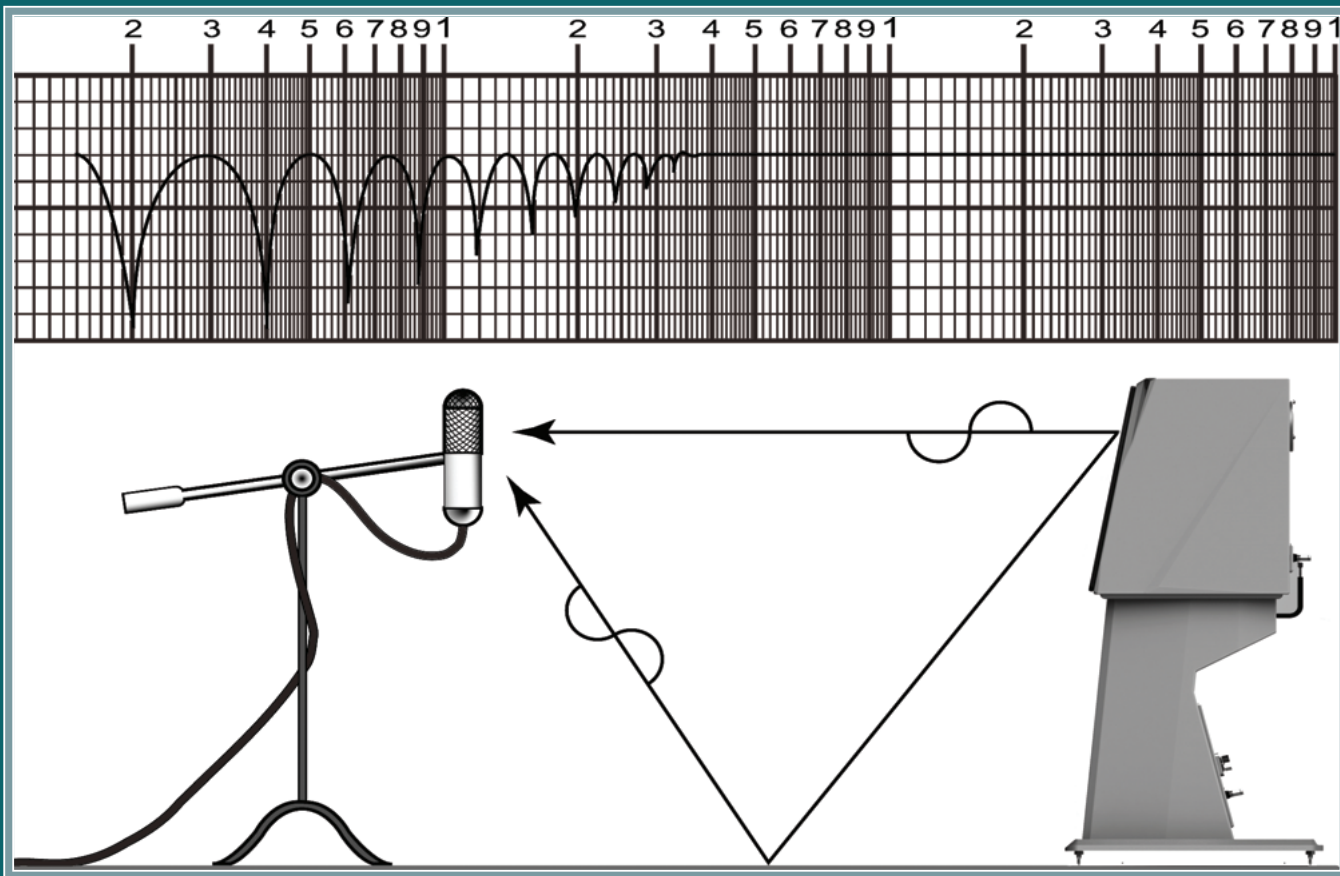


FIGURE 14—COMB FILTER EFFECT

Duette Series 2 In A Dedicated Home Theater

Home theaters can be organized many different ways. Some use rows of couches. Others use rows of multiple chairs.

In addition to watching movies, most users want to listen to two-channel music at the highest quality possible. It is desirable, therefore, to choose a single optimum seating position in a home theater and build the rest of the seating positions around this position.

If your optimum position is located on a couch, you should center the loudspeakers on the center position of the couch.

If the seating area consists of multiple rows of chairs, the second row should be

optimized for the best sound quality. Odd numbers of chairs arranged in rows work best as this will allow a single chair to be positioned in the center. This approach will also provide the best overall sound for the greatest number of seats.

Speaker Placement Versus Listening Position

The location of your listening position is as important as the careful setup of your Duette speakers. Ideally, the listening distance from the speaker (measured to the front of the loudspeaker) should be no more than 1.1 to 1.25 times the distance between the tweeters on each speaker. Therefore, in a long, rectangular room of 12' x 18', if the speaker tweeters are going to be 9' apart, you should be sitting 9'11" to 11'3" from the speaker. This would be more than halfway down the long axis of the room.

Many people place the speakers on one end and sit at the other end of the room. This approach will not yield the finest sound. Carefully consider your listening position. Our experience has shown that any listening position that places your head closer than 14" from a room boundary will diminish the sonic results of your listening.

Decide where you want your favorite listening position to be. Please remember that your Duettes will fill almost any room with the most beautiful sound available. If you take care in placing your new speakers, you will optimize the Duette's performance in your room.

Speaker Orientation

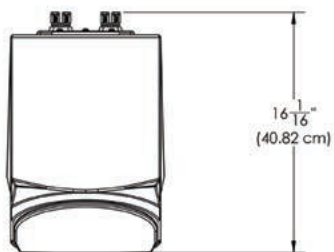
The Duette Series 2 is designed for maximum phase coherence and pulse replication accuracy when each speaker is aimed directly at the listener or microphone. Thus, your Duette should be "toed-in." In other words, the listener, when seated in the listening position looking forward with his/her head in a rested position, should just barely see the surface of the inner side of each Duette. Toeing-in the speakers provides meaningful improvements in resolution of low-level detail in the midrange as well as appreciable improvements in soundstaging performance.

Summary

In summary, for optimal tonal balance accuracy, resolution of low level detail, and soundstaging performance, the Duette should be positioned as outlined in this section. Ideally, the speakers should not be positioned too far from the listener if maximum resolution of low-level detail is required. Duets should be positioned near a boundary, slightly asymmetrically vis a vis the side walls. The speakers should be “toed-in” toward the listener, preferably so that the listener, at his seated position, can barely see the surface of the inner side of the Duette as he/she faces the speaker. It is recommended that distance of one-to-two feet be maintained between the front panel of the Duette and reflective side walls. Depending on the room, judicious use of sound absorbent materials will reduce the space requirement.

By following the guidelines in this manual, your new Duette loudspeakers can provide you with a lifetime of pure music reproduction.

SECTION 6 — SPECIFICATIONS



Section 6.1—System Specifications

Enclosure Type Ported, X- and S-Material

Woofers: 8 inch (20.32 cm) Paper Pulp

Tweeter: 1 inch (2.54 cm) Doped Silk Fabric

Sensitivity: 92 dB (one watt at one meter at 1Khz)

Nominal Impedance: 4 ohms/minimum 4.35 ohms @ 160 Hz

Minimum Amplifier Power: 20 watts per channel

Frequency Response: 33 Hz—21 kHz +/- 3 dB (RAR)
(with port contribution)

Overall Dimensions: Duette:

(Without Spikes) Height: 18 1/2 inches (46.99 cm)
Width: 10 1/2 inches (26.66 cm)
Depth: 16 1/16 inches (40.82 cm)

Novel:

Height: 11 1/2 inches (29.21 cm)
Width: 4 15/16 inches (12.54 cm)
Depth: 9 3/16 inches (23.28 cm)

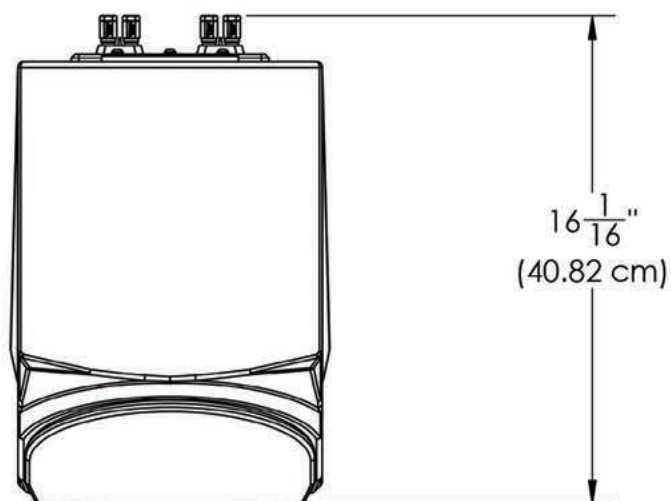
Stand:

Height: 21 7/8 inches (55.56 cm)
Width: 11 7/8 inches (30.16 cm)
Depth: 18 3/4 inches (47.63 cm)

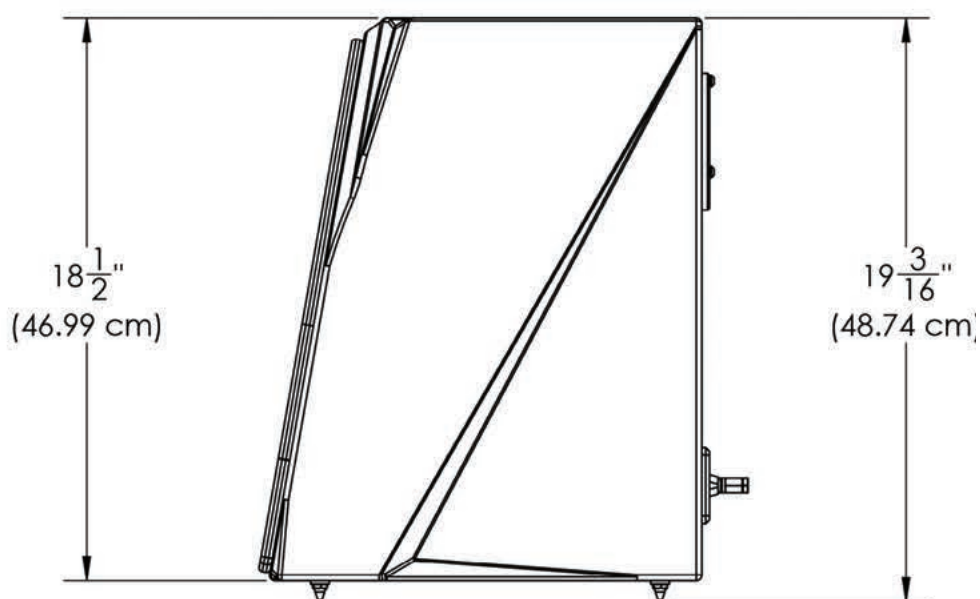
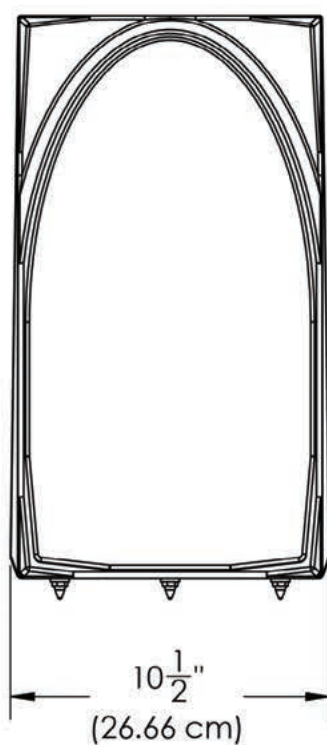
Duette Weight Per Channel: 45 lbs (20.41 kg)

Novel Weight Per Channel: 24 lbs (10.89 kg)

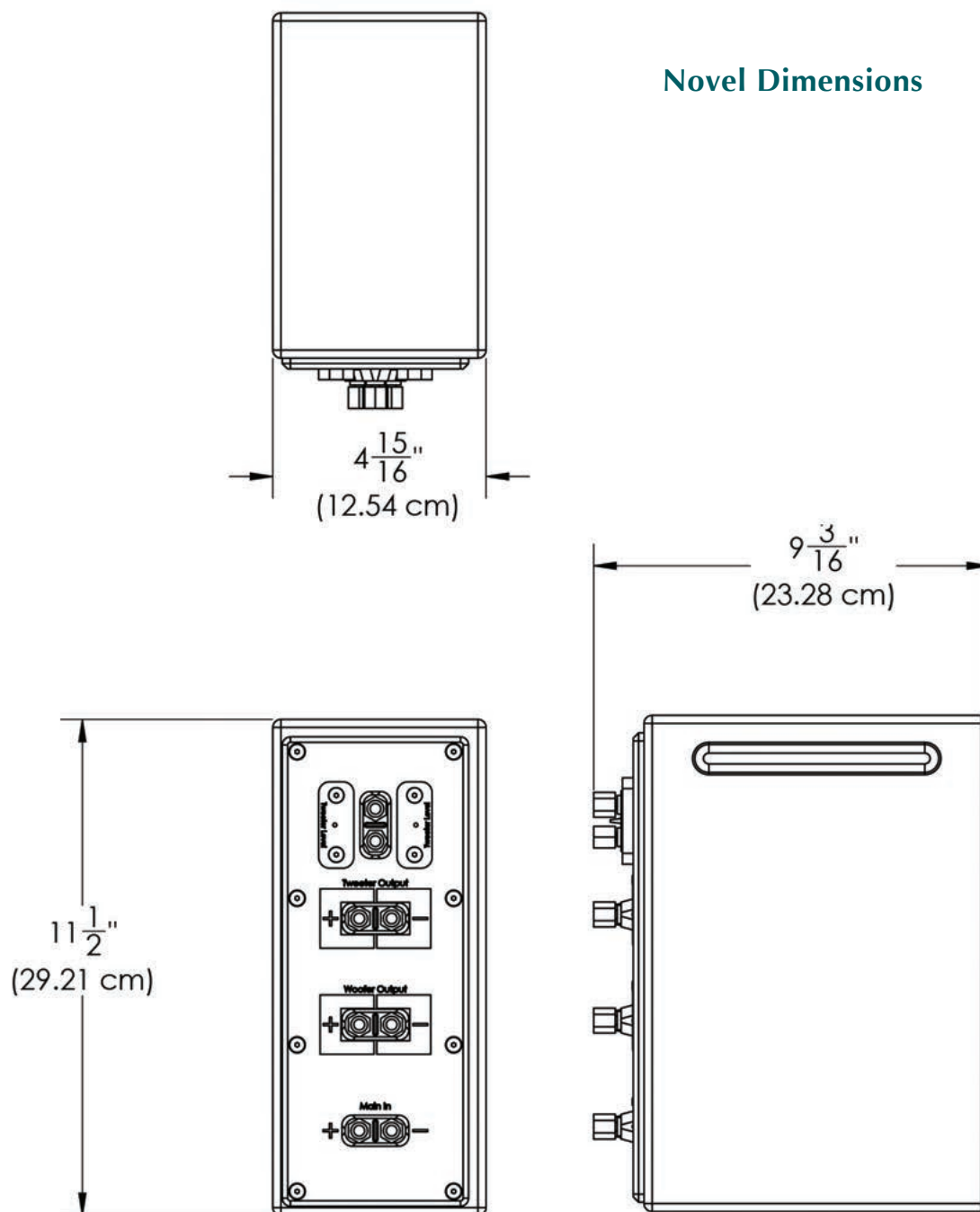
Dedicated Stand Weight Per Unit: 65 lbs (29.48 kg)

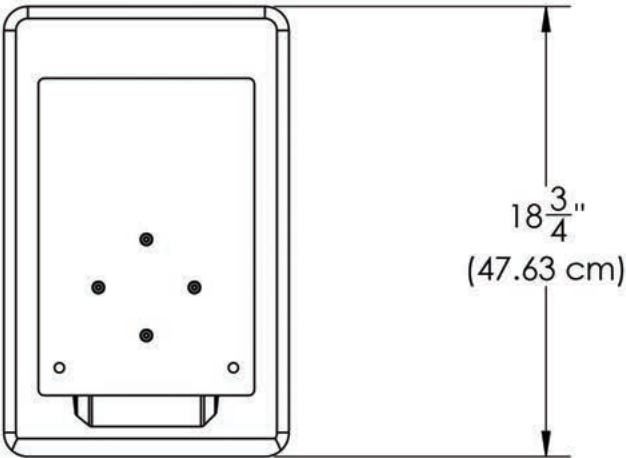


Duette Series 2 Dimensions

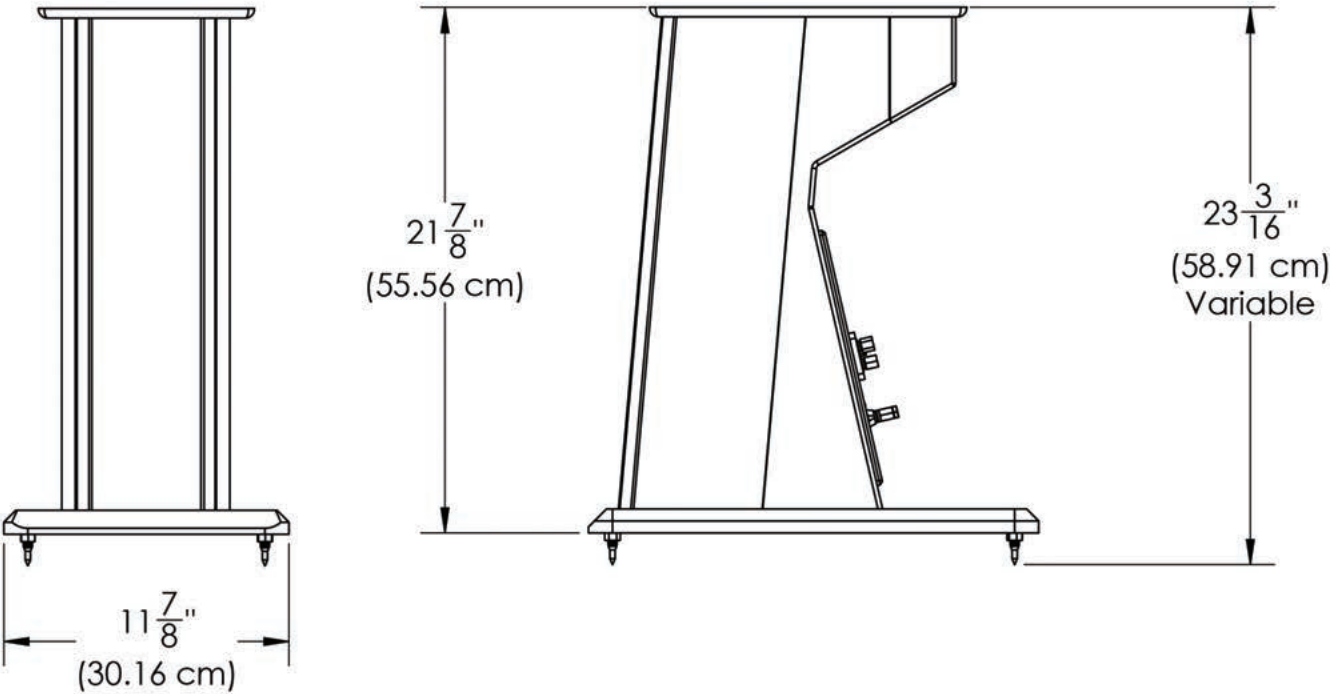


Novel Dimensions





Duette Series 2 Stand Dimensions

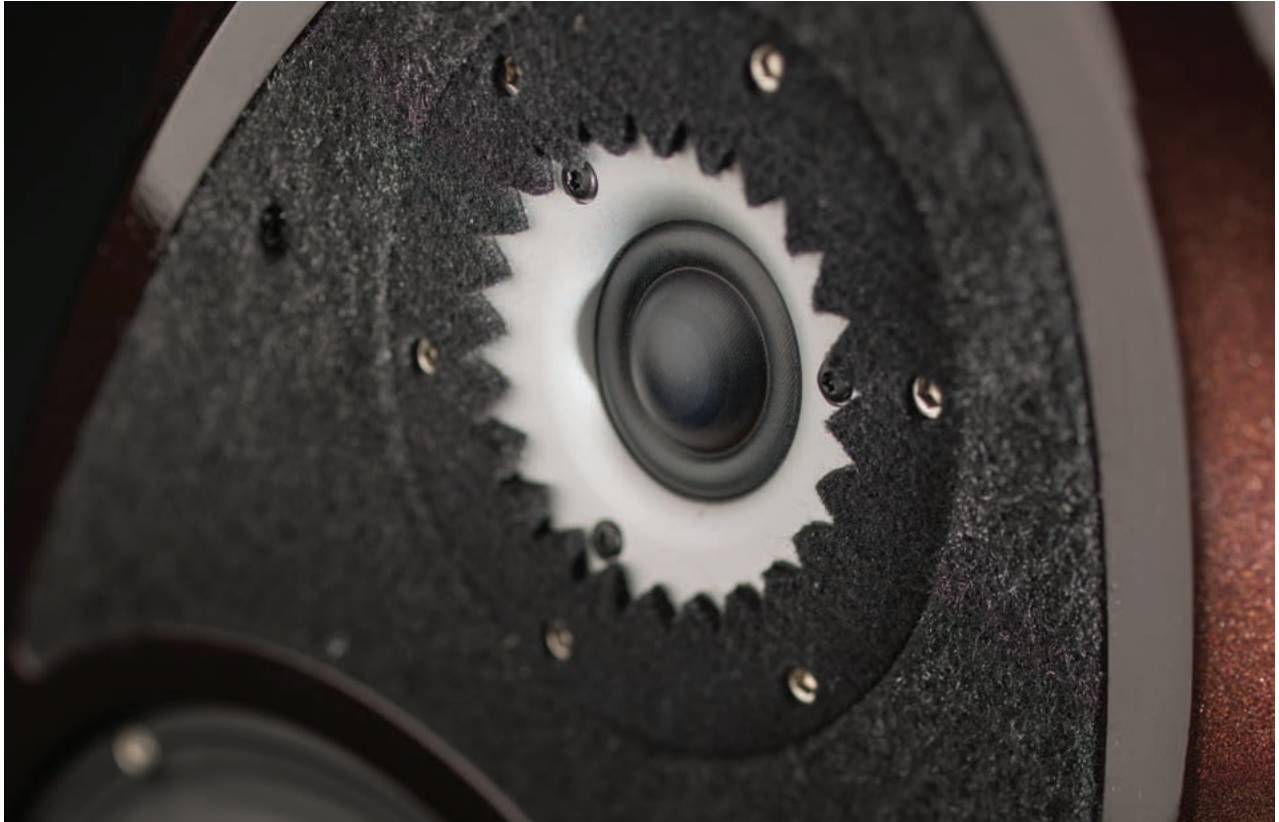


Duette Series 2 Spike Installation For Installation on a shelf or cabinet

Loudspeaker Height	Spike Front	Spike Rear
$\leq 12"$	E	A
13-32"	A	A
33-46"	A	E

Note: We do not recommend installing the Duette series 2 higher than 46" from the ground without modifying the surface on which the Duette is attached.

SECTION 7 — WARRANTY INFORMATION



**WILSON
AUDIO**

Section 7.1—Warranty Information

Limited Warranty

Subject to the conditions set forth herein, Wilson Audio warrants its loudspeakers to be free of manufacturing defects in material and workmanship for the Warranty Period. The Warranty Period is a period of 90 days from the date of purchase by the original purchaser, or if both of the following two requirements are met, the Warranty Period is a period of five (5) years from the date of purchase by the original purchaser:

Requirement No. 1. No later than 30 days after product delivery to the customer, the customer must have returned the Warranty Registration Form to Wilson Audio;

Requirement No. 2. The product must have been professionally installed by the Wilson Audio dealer that sold the product to the customer.

FAILURE TO COMPLY WITH EITHER REQUIREMENT NO. 1 OR REQUIREMENT NO. 2 WILL RESULT IN THE WARRANTY PERIOD BEING LIMITED TO A PERIOD OF 90 DAYS ONLY.

Conditions

This Limited Warranty is also subject to the following conditions and limitations. The Limited Warranty is void and inapplicable if the product has been used or handled other than in accordance with the instructions in the owner's manual, or has been abused or misused, damaged by accident or neglect or in being transported, or if the product has been tampered with or service or repair of the product has been attempted or performed by anyone other than Wilson Audio, an authorized Wilson Audio Dealer Technician or a service or repair center authorized by Wilson Audio to service or repair the product. Contact Wilson Audio at (801) 377-2233 for information on location of Wilson Audio Dealers and authorized service and repair centers. Most repairs can

be made in the field. In instances where return to Wilson Audio's factory is required, the dealer or customer must first obtain a return authorization. Purchaser must pay for shipping to Wilson Audio, and Wilson Audio will pay for shipping of its choice to return the product to purchaser. **A RETURNED PRODUCT MUST BE ACCOMPANIED BY A WRITTEN DESCRIPTION OF THE DEFECT.** Wilson Audio reserves the right to modify the design of any product without obligation to purchasers of previously manufactured products and to change the prices or specifications of any product without notice or obligation to any person.

Remedy

In the event that the product fails to meet the above Limited Warranty and the conditions set forth herein have been met, the purchaser's sole remedy under this Limited Warranty shall be to: (1) contact an authorized Wilson Audio Dealer within the Warranty Period for service or repair of the product without charge for parts or labor, which service or repair, at the Dealer's option, shall take place either at the location where the product is installed or at the Dealer's place of business; or (2) if purchaser has timely sought service or repair and the product cannot be serviced or repaired by the Dealer, then purchaser may obtain a return authorization from Wilson Audio and at purchaser's expense return the product to Wilson Audio where the defect will be rectified without charge for parts or labor.

Warranty Limited to Original Purchaser

This Limited Warranty is for the sole benefit of the original purchaser of the covered product and shall not be transferred to a subsequent purchaser of the product, unless the product is purchased by the subsequent purchaser from an authorized Wilson Audio Dealer who has certified the product in accordance with Wilson Audio standards and requirements and the certification has been accepted by Wilson Audio, in which event the Limited Warranty for the product so purchased and certified shall expire at

the end of the original Warranty Period applicable to the product.

Demonstration Equipment

Equipment, while used by an authorized dealer for demonstration purposes, is warranted to be free of manufacturing defects in materials and workmanship for a period of five (5) years from the date of shipment to the dealer. Demo equipment needing warranty service may be repaired on-site or, if necessary, correctly packed and returned to Wilson Audio by the dealer at dealer's sole expense. Wilson Audio will pay return freight of its choice. A returned product must be accompanied by a written description of the defect. Dealer owned demonstration equipment sold at retail within two (2) years of date of shipment to the dealer is warranted to the first retail customer to be free of manufacturing defects in materials and workmanship for the same time periods as if the product had originally been bought for immediate resale to the retail customer. Wilson Audio products are warranted for a period of 90 days, unless extended to 5 years, as provided above, by return and filing of completed Warranty Registration at Wilson Audio within 30 days after product delivery to customer and the product was professionally installed by the Wilson Audio Dealer that sold the product to the customer.

Miscellaneous

ALL EXPRESS AND IMPLIED WARRANTIES NOT PROVIDED FOR HEREIN ARE HEREBY EXPRESSLY DISCLAIMED. ANY LEGALLY IMPOSED IMPLIED WARRANTIES RELATING TO THE PRODUCT SHALL BE LIMITED TO THE DURATION OF THIS LIMITED WARRANTY. THIS LIMITED WARRANTY DOES NOT EXTEND TO ANY INCIDENTAL OR CONSEQUENTIAL COSTS OR DAMAGES TO THE PURCHASER.

Some states do not allow limitations on how long an implied warranty lasts or an exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you. This Limited Warranty gives you specific legal rights, and you may also have other rights, which vary from state to state.

